

**EUPLOEA ALCATHOE MISENUS MISKIN (LEPIDOPTERA:
NYMPHALIDAE) IN TORRES STRAIT, QUEENSLAND**

TREVOR A. LAMBKIN

Queensland Department of Primary Industries and Fisheries, 665 Fairfield Road, Yeerongpilly,
Qld 4105 (Email: Trevor.Lambkin@dpi.qld.gov.au)

Abstract

Euploea alcathoe misenus Miskin, 1890, stat. rev. is shown to be the appropriate subspecific name for *E. alcathoe* (Godart) populations in Torres Strait, Queensland. The type locality of Thursday Island for *E. a. monilifera* (Moore, 1883) is shown to be erroneous and this taxon should be treated as a junior synonym of either *E. a. nox* Butler, 1866, from Aru Island, Indonesia, or *E. a. occulta* Butler, 1877, from the Port Moresby region of Papua New Guinea.

Introduction

Euploea alcathoe (Godart) has an extensive distribution, ranging from the Moluccas (Obi Island to Aru), through Numfoor and Japen, east to New Guinea and its outlying islands (where it is widespread) and southwards to northern Australia (Braby 2000, Parsons 1998). Its external facies are highly variable and, as a result, this has led to around 30 names of 'races' or subspecies being applied to this species (Parsons 1998); however, several distinct subspecies are recognised (M. De Baar pers. comm.).

E. alcathoe was described in 1819 from a series of specimens from Ambon, in the southern Moluccas, Indonesia (Edwards *et al.* 2001). Subsequently, a number of subspecies or forms were described from closer to Australia, many from Papua New Guinea (Ackery and Vane-Wright 1984, Parsons 1998). Almost all of these have been appropriately assigned to *E. alcathoe* (Ackery and Vane-Wright 1984), but disagreement still occurs over the correct placement of the endemic Australian taxon *E. a. eichhorni* Staudinger (Ackery and Vane-Wright 1984, Braby 2000), with many Australian workers still regarding it as a separate species (Lambkin 2001).

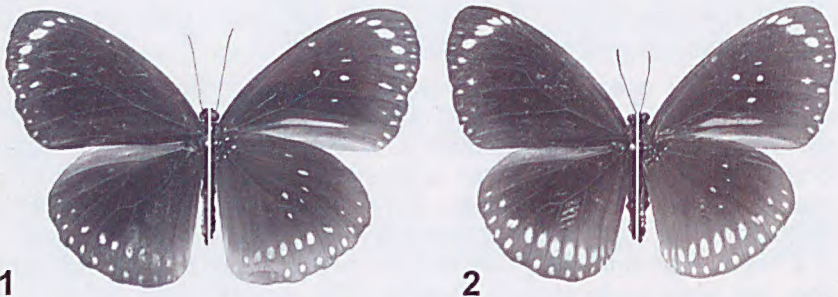
Parsons (1998) amended the taxonomic positions of the various 'races' occurring in Papua New Guinea and determined that, on the mainland, only two 'races' of *E. alcathoe* occurred: *E. a. coffea* Fruhstorfer, 1910 (Type locality: Madang), found on the northern mainland and some offshore islands, and *E. a. occulta* Butler, 1877 (Type locality: Port Moresby), occurring on the southern and eastern mainland and Daru Island. In general, *E. a. coffea* is predominately dark without spotting, while *E. a. occulta* most often has minor white spotting (Parsons 1998), but frequently occurs as a boldly white-spotted form (form *samaraina* Carpenter) in southern Papua New Guinea (Parsons 1998). Similar boldly spotted forms are also known from Aru (*E. a. nox* Butler, 1866) and the Kai Islands (*E. a. nymphas* Fruhstorfer, 1910) (Fenner 1991).

Considering the doubt that still surrounds the taxonomic placement of the distinctive *E. a. eichhorni*, two other recognisably distinct subspecies of *E.*

alcatheae occur in Australia. *E. a. enastri* Fenner is found in northeastern Arnhem Land, Northern Territory and was described from a type series of 24 males and 5 females (Fenner 1991), while *E. a. monilifera* (Moore) [originally *Gamatoba monilifera*] was described from a single female purportedly collected on Thursday Island, Torres Strait, Queensland (Moore 1883) and housed in The Natural History Museum, London. Until the mid 1980s, *E. a. monilifera* was known only from the female type and a single male from Cape York in the Queensland Museum, Brisbane, which had been described as *E. misenus* Miskin (Miskin 1890, Hancock 1995). Both specimens were illustrated by Waterhouse and Lyell (1914).

Since the mid 1980s, many specimens of supposed *E. a. monilifera* have been collected from Torres Strait, almost all from the more northern islands (Lambkin 2001). An examination of the more recently collected females has indicated that none of them resembles the type specimen, which casts doubt on the reliability of the type's label data. Furthermore, the type appears to be closest to *E. a. nox* (Fig. 1) from Aru and form *samaraina* of *E. a. occulta* (Fig. 2), which occurs on the Papua New Guinea mainland, particularly around Port Moresby and Wau (M. De Baar pers. comm.), both areas not a great distance from Torres Strait.

In this paper, the results of the examination of these recently collected specimens are provided, the history of collecting in the region prior to 1883 is discussed, evidence is presented that the type of *E. a. monilifera* was not collected in Torres Strait but most likely originated from eastern Papua New Guinea or Aru, and its nomenclature is consequently revised.



Figs 1-2. *Euploea alcatheae* subsp.; upperside left, underside right; all figures to scale. (1) *E. a. nox*, female, Dobo, Aru, August 1996 [forewing length 45 mm]; (2) *E. a. occulta*, female, Wau, 1500 m, Morobe Province, PNG, 8.x.1987, JG [44 mm].

Abbreviations of specimen depositories are: BMNH – The Natural History Museum, London; CEMC – C.E. Meyer collection, Canberra; MDBC – M. De Baar collection, Brisbane; SSBC – S.S. Brown collection, Bowral; TLIKC – joint collection of T.A. Lambkin and A.I. Knight, Brisbane. Abbreviations of collectors are: AIK – A.I. Knight; CEM – C.E. Meyer; JG – J. Guyomar; SSB – S.S. Brown; TAL – T.A. Lambkin.

Material examined

Euploea alcaethoe monilifera

Holotype ♀ (in BMNH), with 5 labels: (1) 'Thursday I^s. Pur. From E. Gerrard. 80–83.'; (2) 'B.M. TYPE No. Rh. 6569 *Gamatoba monilifera* ♀ Moore'; (3) '*Gamatoba monilifera* ♀ Type Moore'; (4) 'Type'; (5) Thursday Isl. 80–83 ♀'.

Euploea alcaethoe misenus

QUEENSLAND (TORRES STRAIT): 6 ♀♀, Saibai Island, 11-12.iv.1992, 21.ii.1994, 23.iii.1994, 23.iv.1995, 1.iii.1996, 14.iii.2001, TAL (TLIKC); 28 ♀♀, same data except 11-12.iv.1992, 18.iv.2000, 20.iv.2000 (3), 21.iv.2000 (2), 29.iv.2000, 8.v.2000 (3), 21.v.2000, 5.iv.2001, 7.iv.2001 (3), 3.v.2001 (3), 5.v.2001, 7.v.2001, 8.v.2001 (3), 19.v.2001 (2), 13.ii.2004, 15.ii.2004, AIK (TLIKC); 2 ♀♀, same data except 19-20.iv.2001, 3.v.2002, CEM (CEMC); 1 ♀, same data except 22.ii.1994, TAL (MDBC); 10 ♀♀, Dauan Island, 10.iv.1992, 18.iv.1992, 17.ii.2004, 18.ii.2004 (2), 19.ii.2004, 20.ii.2004 (2), 21.ii.2004, 23.ii.2004, TAL (TLIKC); 7 ♀♀, same data except 27.iv.2000, 24.iv.2001, 10.v.2001, 13.v.2001, 25.iv.2001, 14.i.2004, 18.i.2004, AIK (TLIKC); 10 ♀♀, same data except 11-17.iv.2001 (5), 28.iv-2.v.2002 (5), CEM (CEMC); 8 ♀♀, same data except 15-16.iv.2001 (4), 25.iv-2.v.2002 (4), SSB (SSBC); 4 ♀♀, Boigu Island, 21.iii.1994, 10.iii.2001 (2), egg coll. 10.iii.2001, TAL (TLIKC); 1 ♀, Darnley Island, 16.i.1994, AIK (TLIKC).

Euploea alcaethoe occulta

PAPUA NEW GUINEA: 2 ♀♀, Wau, 1500 m, Morobe Province, 8.x.1987, JG (MDBC).

Euploea alcaethoe nox

INDONESIA (ARU): 1 ♀, Dobo, Aru Is., August 1996 (MDBC).

Discussion

In general, 'true' *E. alcaethoe* is a relatively large species, with many of the forms having a predominately dark brown to black ground colour without extensive areas of white spotting (except in *E. a. eichhorni*) (Ackery and Vane-Wright 1984, Parsons 1998). Males of *E. alcaethoe* can be distinguished from other similar *Euploea* Fabricius species by the bowed dorsum of the forewing, presence of a matt-black speculum on the hindwing upperside and the absence of a forewing sex brand. Females of *E. alcaethoe* have broad wings with a predominately dark brown ground colour, often with a pale or whitened hindwing tornus, and a characteristic pale broad streak on the forewing underside below vein CuA₂. *E. alcaethoe* is common locally and frequents marginal vegetation such as vine thickets and mangroves (Fenner 1991, Lambkin 2001) and secondary forest (Parsons 1998). It is a strong flyer

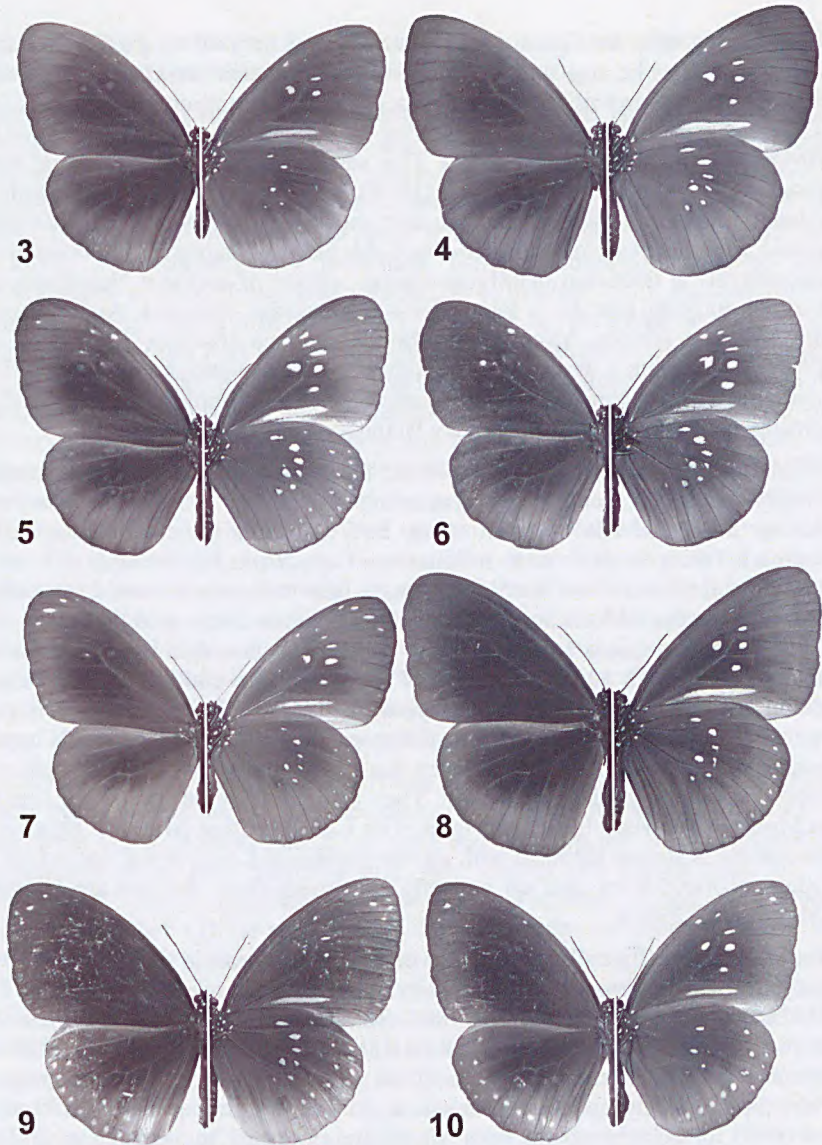
and frequently visits blossom (Lambkin 2001, Parsons 1998). Larvae are known to feed on *Gymnanthera oblonga* (Asclepiadaceae) (Lambkin 2001).

The type specimen of *E. a. monilifera*, which resembles well spotted forms of *E. a. nox* (Fig. 1) and *E. a. occulta* (Fig. 2), is characterised by possessing relatively large white spots in the forewing upperside subapical area (curving outward from the costa) and the hindwing upperside submarginal area, with smaller, distinct hindwing marginal white spots (Moore 1883, Waterhouse and Lyell 1914). Examination of a series of 77 females (listed above) from Torres Strait (Figs 3-10) indicates that none of these recently collected specimens resembles the type. Moreover, they can be roughly placed into four morphological groups, ranging from predominately dark specimens with no upperside spotting through to specimens with some fore and hindwing spotting on the upperside, but still no specimens with as much upperside spotting or as strongly spotted as the type.

These morphological groups are (upperside markings): (1) with no white spotting [29 of 77 specimens] (Figs 3-4); (2) with 0-3 subcostal and/or postmedial small white spots on forewing, 0-2 small white subapical streaks or spots on forewing, no hindwing white spotting [16 of 77 specimens] (Figs 5-6); (3) with 0-3 subcostal and/or postmedial small white spots on forewing, 0-4 sub apical spots on forewing, faint marginal and submarginal white dots or spots on hindwing [26 of 77 specimens] (Figs 7-8); (4) with 3-4 subapical spots on forewing, small marginal and larger submarginal white spots on hindwing [6 of 77 specimens] (Figs 9-10).

In general, females of *E. alcahoe* from Torres Strait are more spotted than males. Now that a larger number of specimens of both sexes is known from Torres Strait, the population is found to be more variable than was previously thought (Fenner 1991). Despite this, they are still not as variable as their Papua New Guinea counterparts, which are known to vary considerably, even from the same locality (Parsons 1998). Examination of Torres Strait females has shown that only a small proportion of them (6 of 77) have significant white spotting, but still lack the relatively large white spots on the forewing subapical and hindwing subterminal areas, which are characteristic of the *E. a. monilifera* type specimen.

An examination of the female holotype (K. Goodger pers. comm.) indicates that the specimen is labelled 'Thursday Isl' and was purchased by the BMNH from 'E. [Edward] Gerrard'. Edward Gerrard was a natural history agent and taxidermist and the BMNH acquired bird skins through his agency from collectors in northern Queensland, including Cape York (Whittell 1954, Morris 2004). The type was registered in the museum collection in 1880 (K. Goodger pers. comm.) [being part of the 83rd collection acquired that year] and subsequently described by Moore (1883). The date of capture and the collector are unknown but, since the specimen was registered in 1880, collection of the specimen must have occurred no later than that.



Figs 3-10. *Euploea alcatheae misenus* females; upperside left, underside right; all figures to scale. (3) Saibai Island, Torres Strait, 21.iv.2000, AIK, [forewing length 42 mm]; (4) Saibai, 19.v.2001, AIK, [46 mm]; (5) Saibai, 8.v.2001, AIK [43 mm]; (6) Saibai, 5.v.2001, AIK [42 mm]; (7) Saibai, 21.iv.2000, AIK [42 mm]; (8) Dauan Island, 24.iv.2001, AIK [48 mm]; (9) Darnley Island, 16.i.1994, AIK [45 mm]; (10) Dauan, 14.i.2004, AIK [43 mm].

The locality data for Gerrard's acquisitions that he sold to the BMNH are questionable, as he also sold a specimen of *E. treitschkei viridis* Butler to the BMNH (designated as the female type) and it too purportedly came from Thursday Island (Label data: 'Thursday Is, Purch. from E. Gerrard. 80-83. BMNH Rh. 6738') (Parsons 1998). This same specimen was illustrated and discussed by Waterhouse and Lyell (1914), who concluded that the Thursday Island collection locality was erroneous and it was 'almost certain that this island was the place of export but not the place of capture'. *E. treitschkei* (Boisduval) is restricted mainly to coastal regions of northern New Guinea, various outlying islands in Papua New Guinea, the Bismarck Archipelago, the Solomon Islands, Vanuatu and New Caledonia (Parsons 1998, M. De Baar pers. comm.) and, since no other specimens are known from the southern coast of New Guinea and Torres Strait, it is unlikely that Gerrard's specimen was collected on Thursday Island.

What further challenges the veracity of the locality labels of some natural history specimens from this era (including Moore's *G. a. monilifera*) is that during the period 1867 to 1880 many bird collectors travelled through the southern Torres Strait en route to Aru from Cape York. For example, J.T. and J.F. Cockerell were two such collectors whose collections were eventually passed on to the BMNH and, since then, it has been discovered that many of Cockerell's specimens labelled 'Cape York' are believed to have originated from Aru (Whittell 1954, Monteith 1987). Waterhouse and Lyell (1914) also examined both Moore's (*G. monilifera*) and Miskin's (*E. misenus*) type specimens. They commented that there was no doubt that Miskin's type originated from Australia and inferred that they had doubts over the origin of Moore's Thursday Island specimen. They also commented on the similarity of Moore's Thursday Island specimen with *E. a. nox* from Aru: 'the figure of the female is almost identical with an Aru female of *E. nox* in our collection'. Other incorrect label data on butterfly specimens from this era are known (Meyer *et al.* 2004).

The major butterfly collections made in the Torres Strait in the late 19th and early 20th centuries, after Moore described his type, were by Gervase F. Mathew on Thursday Island in 1885 (Mathew 1885, Parsons 1998), and Hermann Elgner (Moulds 1977) throughout Torres Strait during the first decade of the last century, some 20-30 years after Moore's description. Published butterfly collection records from Torres Strait prior to 1880 are restricted to those noted by John MacGillivray during the voyage of HMS Rattlesnake during the years 1846-1850 (Moulds 1977). HMS Rattlesnake made only four stops in Torres Strait during 1849 (Mt Ernest, Arden, Darnley Islands and Bramble Cay), with no mention of Thursday Island (Moulds 1977, Monteith 1987). W.Y. Turner in about 1875 (Butler 1876a, Parsons 1998) and Andrew Goldie from the Australian Museum in 1877 and 1879 (Parsons 1998) collected butterflies at Port Moresby in Papua New Guinea.

Natural history specimens, including butterflies, were also collected at Aru in the mid 1860s (Butler 1866, Monteith 1987).

Port Moresby and Aru are the closest locations to the Torres Strait islands where collections of *Euploea* were made around that time and where spotted forms of *E. a. occulta* (form *samaraina*) and *E. a. nox* respectively commonly occur (Parsons 1998). Arthur G. Butler described *E. nox* [*E. a. nox*] from Aru in 1866. Turner later sent his specimens to Butler in the BMNH, who subsequently published Turner's collection records, plus descriptions of several new taxa (Butler 1876a, 1876b, 1877, Parsons 1998). Among these, Butler (1876b, 1877) recorded or described a number of *Euploea* taxa from Port Moresby, including the description of *E. occulta* [*E. a. occulta*] (Butler 1877). Goldie's specimens were eventually passed on to and deposited in the collection of Frederick D. Godman and Osbert Salvin via Henry Grose-Smith (Parsons 1998) and Moore (1883) later used some of these specimens in his monograph. Moore was also based at the BMNH around the same time as Butler and was revising *Euploea*. He placed Butler's *E. occulta* into his newly erected genus *Gamatoba* Moore, as well as describing two further species, *G. monilifera* from Thursday Island and *G. diadema* Moore [a synonym of *E. a. occulta*] from Port Moresby [at that time in the collection of Grose-Smith (Moore 1883)]. Therefore, during the two decades that Butler and Moore were describing new *Euploea* taxa, much confusion occurred with regard to the many different forms and species available to them from the Indo-Australian region. This confusion might also have led to uncertainty with some locality labels on particular specimens.

At the time when Moore was describing or nominating the species within his new genus *Gamatoba*, all the specimens of boldly white-spotted forms of *E. alcatheae* (*E. a. occulta* and *E. a. nox*) that were in the BMNH primarily originated from Port Moresby and Aru, except the female type of *G. monilifera*, which purportedly came from Thursday Island. Therefore, considering that: (1) the similarity of the female type specimen to female *E. a. occulta* (form *samaraina*) and *E. nox*, especially from Port Moresby and Aru where all the known specimens of this species were known from at that time; (2) the first record of butterflies collected on Thursday Island (Mathew 1885) was five years after the BMNH acquired the type specimen; (3) no other female specimen resembling the type has since been collected in Torres Strait; (4) incorrect data labels on specimens from this period are possible, particularly those of Edward Gerrard; (5) Waterhouse and Lyell (1914) had previously expressed doubt concerning the female's label data and inferred Aru as a possible origin; and (6) the bulk and diversity of *Euploea* acquisitions from the Indo-Australian region that were deposited in the BMNH took place during the time Moore and Butler were based there, it is evident from the information and data presented here that Moore's female type most likely was not collected on Thursday Island, but might have originated from Port Moresby or Aru.

Accepting that Moore's holotype of *E. a. monilifera* was not from Australia, then *E. a. misenus* Miskin, 1890, stat. rev. is the name that should be used for specimens from Torres Strait and Cape York. Miskin's type matches, in external facies, a good proportion of *E. alcatheae* males currently known from Torres Strait. Accordingly, *E. a. misenus* is removed from synonymy with *E. a. monilifera*. Based on the evidence presented here, the taxon *E. a. monilifera* (Moore, 1883) should be treated as a junior synonym of either *E. a. nox* Butler, 1866, or *E. a. occulta* Butler, 1877.

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